Unit Profile

Shriram Vinyl & Chemical Industries (SVCI) established in the year 1963 is situated at Kota in state of Rajasthan, in the North - western part of India.
SVCI is a part of DSCL, a Rs. 1550 crore + diversified business group based in North India.

DSCL business interests comprises of:

- Agri-Business (Urea fertilizer, Sugar, Farm inputs marketing such as DAP, Pesticides, Seeds, Agri retailing - Haryali Kisan Bazaar)
- Plastics (PVC and PVC compounds)
- Chemicals (Chlor-Alkali)
- DSCL Building Products (Fenesta door and window profiles)

Other business interests include Cement, Textiles and Energy Services.

Founded by Sir Shriram in 1889 (as DCM limited), today DSCL (which spun of as a separate company in 1990) is managed by Mr. Ajay S. Shriram, Chairman and Senior Managing Director and Mr. Vikram S. Shriram, Vice Chairman and Managing Director along with a highly professional executive team.

DSCL has a strong brand equity reflective of credibility, ethical values and consistent high quality product image. With over 30 years of experience in managing large scale process industries with sustained high level of performance, DSCL meets the needs of a wide range of customers from farmers to industrial users, from house builders to business owners. Fostering enduring relationships is at the core of DSCL's business philosophy - with vendors, business partners, and customers and within the organization between employees.

Caustic Soda (mercury based) plant is the first plant of SVCI, Kota and was commissioned in 1963 in technical collaboration with the Shin-Etsu, Japan. A view of Electrolysers.

In Caustic soda plant, brine solution is electrolysed to produce basic inorganic chemicals i.e. caustic soda lye and flakes, HCl (30%) and Liquid Chlorine. These products are generic in nature and find wide use in various industries such as aluminium, Pulp & Paper, PVC, Rayon, Pesticides, Insecticides, etc.

In year 1999-2000 company had also started production of Stable Bleaching Powder (Capacity 30 TPD).

The quality of these products compares with the best industrial standards. The company is accredited with following:

- **ISO 9001 –2000:** To consistently meet customer expectations and enhance customer satisfaction.

- **ISO-14001**: To continue to remain an Environmentally responsible entity.
- **OHSAS 18001**: For continual improvement in Occupational Health & Safety.

In addition to above, we have also embarked on

- **TPM (Total Productive Maintenance)** to build a comprehensive productive management system for entire life span of the equipment.
- **British Safety Council - Five Star Rating**

Latest initiative of aligning our safety management system with British Safety Council guidelines and ultimately qualify for Five Star Rating. Various guidelines for Safety organisations, Machine Guarding, Electrical Installations, Personnel Protective Equipments, Work Place Management have been firmed up for final implementation across Kota complex

i. Energy Consumption

Chlor Alkali plant is an energy intensive plant. The AC Power is converted to DC power by rectifiers & DC power (low voltage 150 volts & high current 110 KA) is used for electrolysis. During electrolysis apart from the main product Caustic soda lye, Chlorine & Hydrogen are also generated as co-product. Part of the main product caustic soda lye is being converted to Caustic soda flakes as per the market demand.

For converting the caustic soda lye into flakes, SVCI has a fusion plant of capacity 45 TPD. Combination of Furnace oil & Hydrogen is used for heating & converting 47.5 % of Caustic soda lye to flakes (~ 98 % un- hydrous NaOH). Heating of lye is carried out in six furnaces in series of six Nickel pots by indirect heating of pots by burning Hydrogen & Furnace oil.

In year 2003 - 2004 the unit consumed 1345 lakh KWH of electricity. The cost of consumed electricity is 31.47 Rs. crores.

ii. Energy Conservation Commitment Policy and Set up

Continual improvement in Energy Management is a key component of our strategy to improve cost competitiveness of our products and their long-term profitability.

We are committed for benchmarking our energy utilisation techniques with best practices, adopting modern techniques, retrofitting with high efficiency equipment and seeking cooperation from external agencies to reduce our energy consumption.

The plant has an energy conservation committee headed by Jt. Vice President (Chlor Alkali). This committee comprises of 10 (Ten) engineers looking after various sections. They interact on regular basis to discuss various EC steps and implement. In addition to EC each person, in the plant, is well aware and actively participating for energy conservation and cost reduction. Similar committees have been informed in other units of the company. The review of EC performance is done on regular basis.

Plant also has an attractive “SUGGESTION SCHEME” in place to motivate employees towards betterment / improvement of the system, energy conservation, cost reduction etc. Suggestions received from workmen, supervisors, shift engineers, are registered , evaluated & implemented subsequently.

The scheme generally covers all types of suggestions, which will benefit the organization.

More specifically scheme covers suggestion of following aspects: **Safety, Energy Conservation,** Cost reduction, Quality improvement, Work Simplification etc.

Cash rewards in kind ranging from Rs. 300/- to Rs. 20,000/-will be given to each accepted suggestion. In addition, there is a token reward of Rs. 50/-to all eligible employees for filing a suggestion.

iv Energy Conservation achievement

At SVCI, substitution of costlier energy sources and energy-use methods with cheaper and environment - friendly system has always received strong emphasis.

As listed on point no. 16, one of the innovative projects implemented is the partial substitution of furnace oil by hydrogen in our fusion plant.

In year 2003-04, study of entire process of fusion plant including variations in operating load was carried out.
Following were the major observations

S. No.	Observation	Conventional system	Our initiative	Result/Benefit
1	Inconsistency in plant operating load	Typically Caustic soda flakes being a value added product is produced as per the market requirements. Plant is mostly required to produce 600-800 Ton of Flakes/Month. We were operating the plant for about 20 days in a month & for the balance 10 days plant was lying stopped. During the period of plant stoppage, we were not able to utilise the hydrogen available (which is continuously generated in electrolysers) & forced to vent the Hydrogen. This was resulting in poor Hydrogen utilisation. Utilisation was restricted to 80- 85 % only.	**Plant operating load has been turned down**, Now plant is being operated on an optimised level i.e. about 22-24 TPD through out the month, instead of operating the plant at 35 TPD for about 20 days & take the stoppage or the balance 10 days.	This has resulted in improvement in hydrogen utilisation. Improvement can be seen from the utilisation trend as demonstrated below.
2	Heat loss due to radiation.	For converting the caustic soda lye into flakes, Indirect heating of lye is being done by Hydrogen & Furnace oil in series of Fusion pots kept inside the furnaces. Series of six fusion pots were used for converting Caustic soda lye into flakes. Since pots are indirectly heated with furnace oil & hydrogen, Heat loss due to radiation is an unavoidable associated loss with the fusion pots.	At optimised production level, requirement keeping six pots in line was reviewed. We could successfully by pass two pots thereby losses due to radiation & due to burner efficiency (of two pots) have been reduced.	This has resulted in reduction in furnace oil consumption

S. No.	Observation	Conventional system	Our initiative	Result/Benefit
3	Improper operating practises.	During the plant start-up, for achieving the desired temperature of all the pots both hydrogen & furnace oil were burned together. This was resulting in higher furnace oil consumption.	Operating practise of increasing the fusion pots temperatures by burning the hydrogen & furnace oil together has been changed. Now only hydrogen is being used during start-up.	This has also resulted in lower furnace oil consumption.
4	In **efficient hydrogen** burning	Hydrogen was injected in the furnaces through hydrogen touches. Hydrogen torch was simply a one-inch pipe of one-meter length. No burner etc. was being used for efficient hydrogen burning. Also hydrogen & furnace oil were injected through same injection point. This was leading to inefficient hydrogen burning.	For efficient hydrogen burning, Hydrogen burners have been installed & separate injection point has also been provided.	This has resulted in reduction in furnace oil consumption.

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5	Heat loss from flue gas.	Caustic preheating from flue gases was not in practice. Flue gas was vented directly.	It was felt to increase the caustic temperature by available heat of flue gases, generated while burning of Hydrogen in the furnaces. An in-house designed Heat exchanger has been installed for caustic preheating up to 110 Deg C , thus utilising the heat available in the hot flue gas.	This has resulted in further reduction of Furnace oil consumption.
6	Improper operating practises.	During the plant start-up, for achieving the desired temperature of all the pots both hydrogen & furnace oil were burned together. This was resulting in higher furnace oil consumption.	Operating practise of increasing the fusion pots temperatures by burning the hydrogen & furnace oil together has been changed. Now only hydrogen is being used during start-up.	This has also resulted in lower furnace oil consumption.
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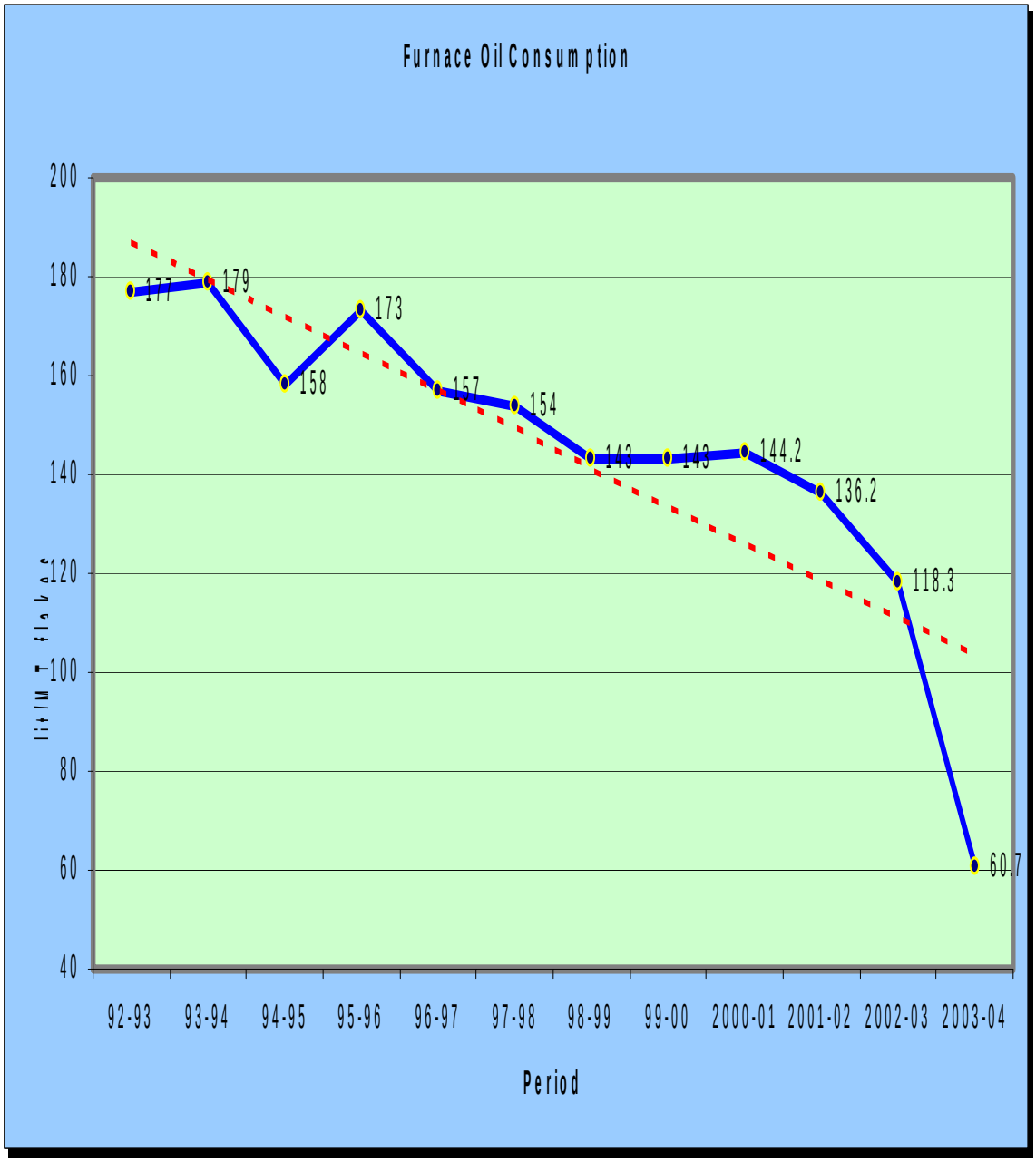
Combined effects of above measures can been by consumption trend of furnace oil & Hydrogen utilisation trend as demonstrated here, which indicate that **focus on efficient use of energy with systematic approach is bound to give fruitful & consistent results.**

Consumption trend of furnace oil:



Hydrogen utilization trend:

v Energy conservation plans and targets

As always been, our improvement plans includes measures for reduction in energy consumption. Following projects are on the anvil:

- Installation of Caustic evaporator.

vi Environment and Safety

Industrial development is an important constituent in our pursuits for economic growth & better quality of life. On the other hand, industrial activities, with out proper precautionary measures for environmental protection are known to cause pollution & associated problems. Hence it is necessary to comply with the regulatory norms for prevention & control of pollution. Along side it

is also imperative to go beyond compliance through ***adoption of cleaner technologies & improvement practices***.

Being an **ISO-14001 & OHSAS 18001** certified company, **adoption of cleaner technology has always received strong emphasis at our complex.**

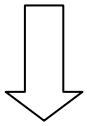
In last three years, various systematic efforts have been made for improvement in environmental management. Few of them are as under:

- Installation of new cooling tower for HCL section.
- Installation of fundabac filter system for Caustic soda lye filtration.
- Improvement in salt quality for reduction in generation of waste sludge.
- Installation of Modified Top & End boxes to reduce the mercury emission in air.
- Installation of distillation furnace for mercury recovery from waste sludge.
- Construction of latest designed secured landfill facility for storage of waste sludge.
- Installation of wash water system to reduce the loss of mercury through air.
- Installation of hydrogen chiller for mercury recovery from Hydrogen stream.

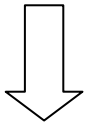
- Recycling of various effluents

Three pronged strategy being adopted is:

- **Elimination of effluent generation at source.**



- **Reduction in generation.**



- **Recycling of generated effluent.**

Safety has been an area of prime importance in our company. Our company has a dedicated team for safety which carries out audit/check of safety by inspecting every point in all sections of plant. The operating and maintenance personnel ensure compliance to safety rules and regulations.

Plant also has “Safety Committee” comprising of people from management and the workers. Meeting of Safety Committee held regularly, where in safety related problems are discussed, progress of safety jobs is reviewed. This meeting aids in providing appropriate solutions to safety related problems.

To increase the awareness amongst working people Safety slogans, sketches are displayed in various locations of plant and instructions to handle emergencies are displayed in each section. Further, training is also imparted to the personnel on Safety.